WHAT IS CLAIMED IS:

1. An actuated prosthesis for replacement of an amputated limb, the prosthesis comprising:

a primary joint member;

a socket connector assembly for connecting a socket to said primary joint member;

an elongated structural member having opposite ends spaced apart along , a main longitudinal axis;

a connector assembly for connecting a terminal portion to on end of said structural member;

a pivot assembly for operatively connecting the structural member to the primary joint member to permit relative rotation between said primary joint member and said structural member about an first axis defined by said pivot assembly;

a linear actuator connected at one end to said structural member and at the opposite end to said primary joint member at a location spaced from said pivot assembly, whereby extension or retraction of said actuator induces a corresponding rotation of said primary joint member relative to said structural member about said pivotal axis.

2. The prosthesis according to claim 1, wherein:

said actuator is connected to said primary joint member and said structural member by respective pivotal connections having pivot axes substantially parallel to and spaced from said first axis.

3. The prosthesis according to claim 1, wherein said actuator is located within said structural member.

4. The prosthesis according to claim 3 wherein said structural member includes at least two spaced-apart bars, the bars generally defining a space in which most of the actuator is located.

5. The prosthesis according to claim 3 wherein said structural member includes a hollow shell and said actuator is located within said shell.

6. The prosthesis according to claim 5 wherein said shell is formed from an open channel member and a detachable closure.

7. The prosthesis according to claim 5 wherein an energy storage module is supported on said shell.

8. The prosthesis according to claim 5 wherein a circuit boards is supported on said shell

9. The prosthesis according to claim 1, wherein said prosthesis is a leg for use by an above knee amputee and further comprising an artificial foot attached to a distal end of the structural member, the artificial foot defining a front side and a rear side of the prosthesis.

10. The prosthesis according to claim 9, wherein one end of the actuator is connected to said primary joint member forwardly of said first pivot axis .

11. The prosthesis according to claim 3, wherein the structural member includes a back plate extending between opposite ends of said structural member.

12. The prosthesis according to claim 9, wherein one end of the actuator is connected to said primary joint member rearwardly of said first axis .

13. The prosthesis according to claim 12, wherein said structural member has a middle section comprising at least two spaced-apart bars, the bars generally defining a space in which most of the actuator is located.

14. The prosthesis according to claim 9, further comprising a socket attached to said primary joint member.

15. The prosthesis according to claim 1, further comprising a controller for controlling the actuator.

16. The prosthesis according to claim 15, wherein said controller outputs control signals to said actuator in response to input signals from proprioceptors.

17. The prosthesis according to claim 17, wherein the controller has an output connected to a power drive, the power drive supplying electrical energy to the actuator, from a power source, in response to the control signals.

18. The prosthesis according to claim 16, wherein the input signals further comprise signals from sensors mounted on said actuator

19. The prosthesis according to claim 1 wherein said actuator includes a rotary motor and a drive member operated by said motor to translate rotary motion of said motor to a linear displacement.

20. The prosthesis according to claim 19 wherein said drive member is a screw rotatable by said motor and a follower displacable along said screw upon rotation thereof by said motor.

21. The prosthesis according to claim 20 wherein said motor is located adjacent to said primary joint member and said follower is connected to said structural member.

22. The prosthesis according to claim 20 wherein said motor is located adjacent to said structural member and said follower is connected to said primary member.

23. The prosthesis according to claim 1 wherein a load sensor is interposed between said actuator and are of said members to provide an indication of loads imposed on said prosthesis.

24. The prosthesis according to claim 1 including a sensor to provide an indication of relative motion between said primary joint and said structural member.

25. The prosthesis of claim 24 wherein said sensors are optical sensors.

26. An actuated leg prosthesis for above-knee amputees, the prosthesis comprising:

a knee member;

a socket connected to the knee member;

an elongated trans-tibial member having an upper end and a bottom end, the trans-tibial member defining a main longitudinal axis;

an artificial foot connected under the bottom end of the trans-tibial member, the artificial foot defining a front side and a rear side of the prosthesis;

a linear actuator having an upper end and a bottom end;

a first pivot assembly to operatively connect the trans-tibial member to the knee member, the first pivot assembly defining a first pivot axis that is perpendicular to the main longitudinal axis;

a second pivot assembly to operatively connect the upper end of the actuator to the knee member, the second pivot assembly defining a second pivot axis that is substantially parallel to the first pivot axis, the second pivot axis being spaced apart from the first pivot axis and the main longitudinal axis; and

a third pivot assembly to operatively connect the bottom end of the actuator to the bottom end of the trans-tibial member, the third pivot

assembly defining a third pivot axis that is substantially parallel to and spaced apart from the first pivot axis.

27. The prosthesis according to claim 26, wherein the trans-tibial member has a middle section comprising at least two spaced-apart bars, the bars generally defining a space in which most of the actuator is located.

28. The prosthesis according to claim 26, wherein the upper end of the actuator is connected to the front side of the prosthesis.

29. The prosthesis according to claim 28, wherein the trans-tibial member comprises a back plate extending between the upper end and the bottom end of the trans-tibial member.

30. The prosthesis according to claim 26, wherein the upper end of the actuator is connected to the rear side of the prosthesis.

31. The prosthesis according to claim 30, wherein the trans-tibial member has a middle section comprising at least two spaced-apart bars, the bars generally defining a space in which most of the actuator is located.

32. The prosthesis according to claim 26, further comprising a controller to control the actuator, the controller outputting control signals in response to input signals from proprioceptors.

33. The prosthesis according to claim 32, wherein the controller has an output connected to a power drive, the power drive supplying electrical energy to the actuator, coming from a power source, in response to the control signals.

34. The prosthesis according to claim 32, wherein the input signals further comprise signals from sensors mounted the prosthesis and located outside the prosthesis.